

The present invention is generally directed to a method of producing an aqueous solution of chlorine dioxide from the reaction of a metal chlorite and an acid forming component which do not react to produce chlorine dioxide in the substantial absence of water. The reactants are separated from liquid water by a membrane which allows the controlled passage of liquid water and/or water vapor into contact with the reactants. The chlorine dioxide thus generated passes out through the membrane into the liquid water to produce the desired aqueous solution. Aqueous solutions containing chlorine dioxide produced in this manner can be conveniently used for commercial and domestic cleaning operations such as in the food industry.